

**REMARKS**

Applicants thank the Examiner for the thorough consideration given the present application. Claims 1-4 and 7-9 are currently being prosecuted. Claims 5, 6 and 10 have been withdrawn from consideration. The Examiner is respectfully requested to reconsider his rejections in view of the amendments and remarks as set forth below.

**Entry of Amendment**

It is respectfully requested that the present amendment should be entered into the official file in view of the fact that the amendment automatically places the application in condition for allowance. Alternatively, if the Examiner does not agree that the application is in condition for allowance, it is respectfully requested that the present amendment should be entered for the purposes of appeal. The present amendment reduces the issues on appeal by amending the claim language to agree with the drawings and specification and thus make the claims more clear. Accordingly, entry of the amendment is considered proper.

**Election/Restriction**

As indicated in the remarks of the previous two responses, Applicants are still unclear as to whether the Examiner considers

the previous requirement an Election of Species Requirement or a Restriction Requirement. Applicants continue to base their response on the understanding that this is an Election of Species Requirement. The Examiner is requested to specify if this is correct.

**Information Disclosure Statement**

Applicants submitted an Information Disclosure Statement on November 21, 2003, the same date that the present action was mailed. The Examiner is requested to acknowledge the Information Disclosure Statement and provide an initialed copy of the PTO 1449.

**Objection to the Drawings**

The Examiner objected to the drawings as not showing every feature of the invention specified in the claims. In particular, the Examiner objected to the non-constant periodic length of the layers. By way of the present amendment, this language has been amended to describe the layers in the same terms utilized in the drawings and specification. Accordingly, the objection to the drawings has been overcome and corrected drawings are not necessary.

Rejection under 35 U.S.C. 103

Claims 1 and 2 stand rejected under 35 U.S.C. 103 as being obvious over Otani et al. (JP05-232297) in view of Sumida (USP 5,303,256). This rejection is respectfully traversed.

The Examiner relies on Otani et al. to show a reflecting mirror having a surface made of different types of multilayer films, which reflects light rays input on the surface. A detector 4 is also provided to which light rays are reflected.

The Examiner relies on the Sumida reference to show a wedge shaped layer which can be used to produce a non-constant periodic length.

Claim 1 as presently amended now better describes the arrangement of the surface part of the reflecting mirror as having different regions with each region being formed of a multilayer film in where multilayer films of different regions have different periodic lengths. This language replaces the previous language which indicated that the periodic length was non-constant. Apparently the Examiner had interpreted this to mean that each multilayer film was not constant. In fact, the desired meaning of this term was that the periodic lengths was different between multilayer films of different regions. This is in keeping with the specification and description of the first embodiment and as shown in Fig. 3. In view of this understanding, Applicants submit that

the Sumida reference is not relevant, since it does not show that the films in different regions have different periodic lengths.

Regarding Otani et al., it is clear that the reflecting mirror has a surface part formed of a plurality of multilayer film reflectors where each reflector has a plurality of multilayer films which may be alternating layers of nickel and carbon with 50 layers of each. However, the Otani reference does not teach the concept that the periodic length of different regions differs from each other. In fact, the abstract sets the period of the multilayer film as 4.22-4.76nm. It is understood that this very narrow range is the same for each of the reflectors and does not indicate a difference of periodic length between regions. It should be noted that the present invention is designed to deal with incident radiation which extends from the ultraviolet region to the X-ray region. It is clear that the Otani et al. reference does not have a difference in periodic length which would allow this type of range. Since neither Otani et al. nor Sumida teach the concept of the periodic lengths of differing regions to be different, and since this range would not be obvious thereover, Applicants submit that claim 1 is allowable.

Regarding Sumida, the Examiner has cited this reference as an example showing a non-constant periodic length of the film. Although the film shown in this reference is effective in the

region of visible light, it does not function at all for reflecting incident extreme ultraviolet or x-ray, which means that there is no reflection. This occurs because the optical characteristics of the material change due to significant differences in the optical energy, especially when this involves orders of magnitude. Accordingly, it is clear that the method disclosed in Sumida is ineffective in the region of extreme ultraviolet and x-rays.

Furthermore, in the Sumida method, the film selectively reflects only one particular wavelength at a time, even in the visible light range. The wavelength is achieved by changing the incident angle of the mirror. Thus, neither Sumida nor Otani show that more than one wavelength can be selected. This differs from the present invention where the reflection involves light of a wide wavelength range simultaneously. Accordingly, claim 1 is allowable over this combination of references.

Claim 2 depends from claim 1 and as such is also considered to be allowable. In addition, this claim further recites that the different regions reflect different energies of light rays in a range extending from soft X-ray to extreme ultraviolet. Also, the present invention uses a multi-layer film with a non-constant periodic length the film designed for reflecting extreme ultraviolet and x-ray, rather than the material shown in the

references. This concept is not seen in either of the references and accordingly claim 2 is additionally allowable.

Claims 3 and 4 stand rejected under 35 U.S.C. 103 as being obvious over Otani et al. in view of Sumida as applied above and further in view of Thoe (USP 5,027,377). The Examiner cites the Thoe reference to show an X-ray telescope that has a surface with a circular shape. However, even if this reference does teach this shape, it does not aid the Otani and Sumida references to overcome their deficiencies as noted above, especially the lack of showing of the films having different periodic lengths in different regions. Accordingly, claims 3 and 4 are allowable over this 3-way combination of references.

Claims 7, 8 and 9 stand rejected under 35 U.S.C. 103 as being obvious over Otani et al. in view of Sumida and Thoe as applied above and further in view of Perryman (USP 5,381,001). This rejection is respectfully traversed.

The Examiner relies on Perryman to show the use of a super conducting tunnel junction detector in a telescope. However, even if this reference does teach this concept, Applicants submit that these claims are allowable based on their dependency from allowable claim 1 as described above.

Conclusion

In view of the above remarks, it is believed that the claims clearly distinguish over the patents relied on by the Examiner, either alone or in combination. In view of this, reconsideration of the rejections and allowance of all the claims is respectfully requested.

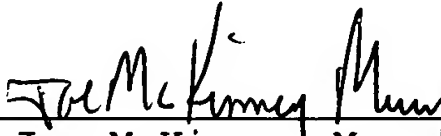
Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Robert F. Gnuse (Reg. No. 27,295) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.


Pursuant to 37 C.F.R. §§ 1.17 and 1.136(a), Applicant(s) respectfully petition(s) for a one (1) month extension of time for filing a reply in connection with the present application, and the required fee of \$110.00 is attached hereto.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

BIRCH, STEWART, KOLASCH & BIRCH, LLP

By   
Joe McKinney Muncy, #32,334  
P.O. Box 747  
Falls Church, VA 22040-0747  
(703) 205-8000

 KM/RFG/jmb/ndb  
1794-0146P